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Teaching Style, Motivational Climate, and Physical Education: An Intervention Program for Enhancing Students' Intention for Physical Activity

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Abstract

Lifelong physical activity is one goal of physical education. This study aimed to investigate the effectiveness of a 9-week designed intervention in physical education at promoting elementary school students' intention for physical activity. The intervention was based on the creation of a task-oriented motivational climate during physical education via two teaching styles. The sample (n = 157) was assigned to control (n = 96) and two intervention (n = 39 and n = 22) groups. The intervention groups exhibited statistically significant greater intention for being physically active after the program. These findings indicate that an appropriate design of physical education could support students' physical activity outside the educational framework.

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One concern of today's society is "health for all." This objective relates to physical education (PE), since participation in some form of exercise at all stages of life is positively associated with quality of life and in general with robustness and better health (McEvilly et al., 2014). Moreover, PE can play an essential role in promoting a person's health through regular physical activity (PA). In Greece, PE targets the entire student population, since it is a compulsory subject in the curriculum of both primary education and secondary education. This means that according to the latest statistics in Greek public and private schools, 1,197,512 male and female students attend PE (Hellenic Statistical Authority, 2019). Within this framework, PE programs attempt to instill, cultivate, and develop students' fondness for PA and the adoption of this practice as a philosophy for higher quality of life. However, in reality, this venture encounters difficulties, since the majority of students gradually lose interest in participating and trying in PE class and seem to enjoy the lesson less and less (Barkoukis et al., 2010). In addition, attitudes toward PE decline as students progress through grade levels (Subramaniam & Silverman, 2007), and everyday PA levels decline as age increases, especially across adolescence (Trost et al., 2002).

Therefore, there is a need to develop PE lessons that foster students' PA. The theory of planned behavior (TPB; Ajzen, 1991), goal orientation theory (Ames, 1992b; Nicholls, 1989), and Mosston's spectrum of teaching styles (Mosston & Ashworth, 2002) can assist in this direction. The TPB proposes that students' intentions to engage in PA are the main predictor of actual behavior. Goal orientation theory suggests that this can be achieved through the establishment of a task-oriented climate in PE and the realization of teaching styles (from Mosston's spectrum theory) that foster feelings of success and self-improvement, give opportunities for exploration, and promote lesson satisfaction and interaction among students. Relevant empirical findings support these arguments (Chatzipanteli et al., 2015; Erdvik et al., 2014).

Theory of Planned Behavior and Intention to Engage in Physical Activities

The TPB (Ajzen, 1991) proposes that intentions are usually the main motive leading to a behavior. In general, the higher the intentions toward a particular behavior, the greater the probability for

this behavior to occur. As Ajzen and Fishbein stated (1977), "a single behavior is determined by the intention to perform the behavior in question" (p. 888). The TPB names three factors influencing a person's intentions: (1) the attitudes people place upon the outcome of the behavior, (2) the individual's perception of how others view the behavior (i.e., subjective norms), and (3) the individual's perception of the extent to which they feel they can actually perform the behavior (i.e., perceived behavioral control). Empirical studies (Hagger et al., 2007; Lazuras et al., 2011) have provided evidence that the TPB is a useful approach for understanding adolescents' intentions toward school PE and leisure-time PA.

Goal Orientation Theory, Motivational Climate, and Intention to Engage in Physical Activities

According to goal orientation theory (Ames, 1992b; Nicholls, 1989), participation of a person in a learning and achieving activity can be sufficiently interpreted under the scope of two major goal orientations: task and ego. An ego-oriented student is motivated to engage in PA to represent their competences to others and/or to outperform others. In contrast, a task-oriented individual has primarily the task in mind and is motivated for PE to master the task and/or to progress their task-specific competences. Empirical findings have supported that both the physical educator's behavior and their method of motivating their students characterize a motivational climate that influences students' goal orientations and psychological experiences during PE classes (Reeve, 2009). In particular, an ego-oriented climate, which is characterized by highlighting social comparisons of students' performance, praising students with higher performance, or emphasizing the assessment of students' performance, can foster ego orientation. In contrast, a task-oriented climate, which is characterized by highlighting individual development of performance, accentuating mistakes as a learning opportunity, or emphasizing learning processes instead of performing, can promote task orientation (Lüftenegger et al., 2017; Lüftenegger et al., 2014). With a special focus on PE, findings have indicated that establishing a task-oriented motivational climate during PE is an appropriate practice that increases students' intention to participate in PE classes and, as a result, their intention to adopt a more active lifestyle (Escartí &

Gutiérrez, 2001; Gutiérrez & Ruiz, 2009; Parish & Treasure, 2003; Sproule et al., 2007).

Teaching Styles and Intention to Engage in Physical Activities

The spectrum of teaching styles (Mosston & Ashworth, 2002) describes the teacher–student interactions with respect to decisions made during the learning course. The teaching styles may range from the "command style" (Style A), wherein the teacher makes the decisions, to the "self-teaching style" (Style J), wherein the pupil makes the decisions. In between, Mosston and Ashworth (2002) identified nine more teaching styles that include different levels of teacher–student interactions. In this study, we utilized the reciprocal (Style C) and inclusion (Style E) teaching styles. In the reciprocal style, the students are divided into pairs (or small groups) and one performs the drill while the other provides feedback (based on the criteria set by the teacher). With this style, the students learn to help one another, to provide feedback, and to socialize. Thus, the reciprocal teaching style seems to be an appropriate style to foster social interaction among students. At the inclusion style, the activity is offered with various degrees of difficulty and students must decide where to start (difficulty) and when to move to the next level. As a result, as long as the PE teacher creates appropriate levels, all students—regardless of their abilities—participate in the class and have the opportunity to feel capable, explore their abilities, practice and perform at different levels of difficulty in the same activity, recognize their progress, and feel successful.

Studies have indicated that the teaching styles that promote interaction among students are positively correlated with students' intention to continue participating in sports after graduation (Morgan et al., 2005; Ntoumanis, 2001). Similarly, the inclusion style is associated with task-oriented goals and with the perception of a task-oriented climate during lessons (Goudas et al., 1995; Salvara et al., 2006). Additionally, studies with intervention programs implemented within PE showed that reciprocal style along with the inclusion style resulted in students having more positive attitudes toward involvement and engagement in PA (Christodoulides et al.,

2001) and that students using the inclusion style reported more adaptive motivation (Goudas et al., 1995). This evidence indicates that the reciprocal and inclusion teaching styles are key teaching approaches that can promote students' intention to participate in physical activities not only during PE but also during leisure time.

Study Aims and Hypotheses

In general, although students' intention to participate in leisure-time PA has been extensively investigated, few studies have implemented intervention programs based both on trying to create a task-oriented motivational climate and on adopting specific teaching styles during PE. As the literature review shows, specific teaching styles can be associated with different perceptions of motivational climates. Less is known, however, about the effect of an intervention program that considers both the promotion of adaptive teaching styles (i.e., reciprocal teaching style and inclusion style) and the task-oriented climate. A more detailed investigation of this interplay may shed light on the understanding of the joint effect of teaching styles and motivational climate on students' experiences in PE lessons. It is suggested that teaching styles can be perceived by students as indicators for the motivational climate during PE, which in turn affects students' intentions for PA (Ames, 1992c; Lüftenegger et al., 2014). Moreover, there is limited evidence in implementing such interventions to the whole range of school physical education. Most of the studies were conducted with samples of adolescents (i.e., secondary education). There is no evidence so far with primary school students. However, as Pease and Anderson (1986) claimed, the most critical period for shaping a positive or negative attitude toward PE and PA is the time students spend in primary school classes. Therefore, the aim of this study was to determine the effect of a PE intervention program (based on reciprocal and inclusion teaching styles and on task-oriented motivational climate) on primary school students' intention to adopt an active lifestyle in the future. The main hypotheses of the study were (1) the reciprocal teaching style and the inclusion style will positively influence students' intention to adopt PA as a lifestyle and (2) a task-oriented climate will positively influence (covariate) students' intentions to participate in leisure-time PA.

Method

Participants

The sample comprised 157 Greek primary school students (80 males, 77 females), with a mean age of 11.4 ± 0.50 years, attending eight classrooms: four classrooms of fifth grade and four classrooms of sixth grade, in four public schools in North Greece. At the beginning of the study, two classrooms of sixth grade and two classrooms of fifth grade were randomly assigned to the intervention group ($N = 61$), whereas the other four classrooms (two of fifth graders and two of sixth graders) were assigned to the control group ($N = 96$). The intervention group was further divided randomly into two subgroups: one subgroup of 39 students participating in the inclusion style program and another subgroup of 22 students participating in the reciprocal style program.

Design of Intervention and Procedure

In this study, the intervention program was based on and utilized two styles from Mosston's spectrum of teaching styles (Mosston & Ashworth, 2002): the reciprocal style and the inclusion style. Another feature of the intervention was the creation of a task-oriented climate, since this kind of motivation enhances students' attitudes, enjoyment, and interest for PE (İlker & Demirhan, 2013; Morgan & Carpenter, 2002; Standage et al., 2003).

The intervention lasted 9 weeks and the number of instructors was the same for all groups. Students in all groups attended PE classes two times per week for a total of 18 lessons. The subject matter of the PE lessons during this period—which was a part of the regular curriculum—included volleyball, basketball, and gymnastics. The intervention group students were taught these subjects through two teaching styles. The first intervention subgroup ($n = 22$) used the reciprocal style and the second intervention subgroup ($n = 39$) the inclusion style. The intervention program was taught by two regular physical educators, who were teaching in two of the four schools included in the research. Earlier, both were introduced to the program framework and received the respective 18 prepared lessons. One of these educators taught the intervention subgroup that participated in the program with the reciprocal style and the other taught in the

intervention subgroup that followed the program with the inclusion style. During the intervention period (viz., for these 9 weeks), the control group participants followed the regular curriculum that included the same activities (i.e., volleyball, basketball, and gymnastic), also with their regular physical educators. The latter gave the former instructions concerning the three mentioned activities without adopting a specific teaching style during these 18 lessons. One week before the start and immediately after the end of the program (pre- and posttest respectively), all the participants completed the questionnaires.

The study was approved by the Hellenic Pedagogical Institute, which also granted permission to conduct the research within the schools. In addition, school authorities and the students' parents were informed about the study and provided consent for students to take part in the study. Participants were ensured that their participation was voluntary, their responses would remain confidential, and this did not pertain to some kind of evaluation of their performance in the PE course. Questionnaires were completed in the classroom, without the presence of the teacher but under the supervision of a researcher, and lasted 15 to 20 min.

Measures

Demographic Questionnaire

The demographic questionnaire included questions about age, gender, and class.

Perceived Motivational Climate

The Learning and Performance Oriented Physical Education Classes Questionnaire (LAPOPECQ; Papaioannou, 1994) was administered to all participants and assessed their perceptions of the motivational climate during PE lessons. LAPOPECQ includes five scales. Two (i.e., class learning orientation and teacher's promotion of learning orientation) provide scores for a learning/task goal climate (13 items; e.g., "In this PE class, the way the lesson is taught helps me learn how to exercise myself"). The remaining three subscales (i.e., class competitive orientation, credit given to success without effort, and worries about mistakes) correspond to an ego/performance goal climate (14 items; e.g., "In this PE class, the

students try to outperform each other"). Responses were anchored on a 5-point Likert scale from *absolutely disagree* (1) to *absolutely agree* (5). All items were prefaced with the stem "In my physical education class...." All five scales of LAPOPECQ have shown acceptable internal consistency coefficients (Papaioannou, 1994).

Intention to Engage in Physical Activity

Students' intention to adopt an active lifestyle was assessed through a questionnaire that consisted of three questions: "I intend to keep exercising systematically for the rest of the year," "I'll keep exercising systematically for the rest of the year," and "I am determined to keep exercising systematically for the rest of the year." Participants responded on a 7-point Likert scale from *absolutely impossible/absolutely no* (1) to *absolutely possible/absolutely yes* (7). For the analysis, the mean scores of all three responses were used. The specific instrument was established for the purpose of the study and all questions were based on guidelines provided by Ajzen (2004) and Ajzen and Madden (1986). Studies that adopted this method to assess participants' intentions to engage in leisure-time PA have proved that this kind of measure is reliable and valid (Chatzisarantis et al., 2019; Wang & Wang, 2015).

Data Analysis

In the beginning of the intervention and for determination of any differences in the participants' perception of motivational climate, as well as in their intention to be physically active, we conducted three one-way analyses of variance (ANOVAs). We examined the effect of the teaching style on students' intentions at the end of the intervention with an analysis of covariance (ANCOVA) with the independent variable being the group (e.g., group with reciprocal teaching style, group with inclusion teaching style, and control group), the covariate the initial scores of the intentions, and the dependent variable the final scores of the intentions. We used a Scheffé test to investigate the significance of the differences between the group means. Moreover, we conducted two 2 (within-subjects factor: Time) × 3 (between-subjects factor: Group) repeated-measures ANOVAs to determine any differences concerning the motivational climate after the program. Additionally, we performed two repeated-measures ANCOVAs to explore the effectiveness of the intervention

program with the independent variable being the group, the dependent variable the intentions toward PA (in pre- and posttest), and the covariate the difference in the mean scores of task- or ego-oriented climate between the pretest and the posttest. The statistical significance was set at the .05 level.

Results

Descriptive Statistics

Table 1 presents means and standard deviations for all variables in each group on pre- and postmeasure.

Manipulation of Teaching Style and Its Effect on Students' Intention

We performed a one-way ANOVA to investigate whether there were differences among students' intention toward PA before the intervention with the intention scores as the dependent variable in the whole group. The findings showed no significant pretest differences between the three groups, $F(2, 154) = 2.117$, $p > .05$. However, after the intervention, the ANCOVA with the independent variable the teaching styles, the covariate the initial scores of the intentions, and the dependent variable the final scores of the intentions revealed that teaching style is a significant factor for a person's intention toward PA, $F(2, 144) = 15.411$, $p < .001$, $\eta^2 = .176$. Moreover, as the results of Scheffé test showed, students who attended the intervention program with reciprocal style (first intervention subgroup) and those who attended the program with the inclusion style (second intervention subgroup) scored significantly better in intention toward PA than did students in the control group ($p < .01$ and $p < .001$, respectively). This finding indicates that when a physical educator adopts the reciprocal style and/or the inclusion style, then students' intention to be active outside of the educational framework is significantly strengthened.

Manipulation of the Motivational Climate in Favor of a Task Orientation as Part of the Intervention Program

As mentioned, the intervention program of this study was based on adopting a specific teaching style (viz., inclusion style or reciprocal style) and on fostering a task motivational climate. To verify

Table 1

Means and Standard Deviations of the Variables for Each Group of Fifth and Sixth Graders (the Last Two Grades in Greek Elementary School System) Before and After the Intervention Program

	Pretest						Posttest					
	Group with inclusion style *n* = 39		Group with reciprocal style *n* = 22		Control group *n* = 96		Group with inclusion style *n* = 39		Group with reciprocal style *n* = 22		Control group *n* = 96	
Variable	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***
Intention	5.90	1.37	5.91	.94	5.39	1.65	6.73*	.64	6.71*	.66	5.44	1.66
Task-oriented climate	3.86	.55	3.97	.33	4.22	.42	4.59*	.27	4.67*	.25	4.23	.52
Ego-oriented climate	2.74	.66	2.44	.83	2.54	.53	1.95*	.58	1.59*	.56	2.69	.59

possible changes in motivational climate, we performed two one-way ANOVAs. The analysis showed that although students' perceptions of an ego-oriented climate were at the beginning of the program similar in all three groups, $F(2, 147) = 2.068$, $p > .05$, their perceptions of a task-oriented climate differed, $F(2, 152) = 10.299$, $p < .001$. More specifically, as the Scheffé test indicated, participants in the inclusion teaching style subgroup scored significantly lower than participants in the control group with regard to the task-oriented climate ($p < .001$). This random result indicated that prior to the intervention, students in the inclusion style program perceived that the motivational climate was less task oriented than did their peers in the control group; thereby, in this subgroup, the manipulation of the motivational climate during the intervention in favor of a task orientation was very noteworthy.

After the intervention, and to test the effect of group (two intervention, one control group) and time (pretest and posttest) on students' perceptions of motivational climate, we applied two 3 × 2 repeated-measures ANOVAs. The findings revealed significant differences between the three groups in both task-oriented motivational climate and ego-oriented motivational climate, $F(2, 144) = 41.901$, $p < .001$, $\eta^2 = .368$, and $F(2, 140) = 42.809$, $p < .001$, $\eta^2 = .379$, respectively. In particular, the Scheffé test indicated that participants in the control group, after the end of the program (posttest), perceived the climate as less task oriented and more ego oriented than did participants in the intervention subgroups, who followed the program with the reciprocal style ($p < .001$ and $p < .001$, respectively) and with the inclusion style ($p < .001$ and $p < .001$, respectively).

Effect of the Intervention Program on Students' Intentions to Participate in Physical Activities Outside the Educational Framework

To explore whether the adopted teaching styles and the established motivational climate (as the basic elements of the intervention) affect positively students' intentions to engage in physical activity, we performed two repeated-measures ANCOVAS to test the effects for both motivational climates. In detail, students' intention was the dependent variable. The three groups of participants (namely, intervention subgroup with reciprocal style, intervention subgroup with inclusion style, and control group) were set as the independent

variable and changes of task- or ego-oriented climate served as the covariate. Results of the model with task-oriented climate as covariate showed that both the task-oriented climate that was created during the intervention and the two teaching styles that were adopted affect positively students' intentions toward PA, $F(1, 143) = 4.890$, $p < .05$, $\eta^2 = .33$, and $F(2, 143) = 6.870$, $p < .01$, $\eta^2 = .088$, respectively. On the other hand, the model with ego-oriented climate as covariate revealed that the effect of ego-oriented climate was not significant for students' intentions to engage in PA, $F(1, 139) = .329$, $p > .05$, $\eta^2 = .002$, although the role of the group (as independent variable) remained significant, $F(2, 139) = 9.806$, $p < .001$, $\eta^2 = .124$.

These findings indicate that both the reciprocal teaching style and the inclusion teaching style as well as a task-oriented motivational climate as parts of specific intervention programs in PE are significant factors that should be considered (a) in establishing an effective intervention in favor of positive intentions toward PA and (b) in interpreting a student's intention to be physically active outside the educational framework.

Discussion

This study was designed to examine the effectiveness of a PE program in supporting elementary students' intention toward PA. The strategies utilized were based on both the teaching styles (reciprocal and inclusion) and techniques for the creation of a task-oriented motivational climate. The results of this study support and extend previous knowledge about students' intention to adopt an active lifestyle. The findings suggest that both the reciprocal teaching and the inclusion teaching style are effective in increasing students' motivation to engage in PA. These results are in accordance with other related studies, which indicate that (a) high levels of positive intentions for a specific behavior in PE and a positive motivational climate are related to specific styles (Christodoulides et al., 2001; Goudas et al., 1995; Ntoumanis, 2001); (b) reciprocal teaching style affects positively students' intrinsic motivation and promotes learning of motor skills (Mizios et al., 2009), improves a person's positive attitudes toward involvement and engagement in PA (Christodoulides et al., 2001), and has a positive effect on students in the same age as in our sample (11 to 12 years old; Chatoupis & Emmanuel, 2003); and (c) the inclusion teaching style offers opportunities to students

to feel more capable (Sanchez et al., 2012) and enhances their motivation (Goudas et al., 1995). Therefore, it is not surprising that the intervention group exhibited significantly higher intention to participate in leisure-time PA after the end of the intervention program in comparison to the control group. After all, this "turn" regarding posttest intentions could be interpreted according to the TPB (Ajzen, 1991). That is, the qualitative interaction between two peers—which is promoted in reciprocal style—and the feeling of being capable and progressing during PE—which is a characteristic element of the inclusion style —are crucial factors for students' positive attitudes toward PA, students' perceptions of how classmates would view their participation in PA (subjective norm), and students' perceptions concerning their capability to engage in PA (behavioral control). Therefore, students' intentions toward leisure-time PA are increased when the focus during PE lessons is on students' interaction and on supporting their autonomy and when all students have the opportunity to participate in the subject being taught—irrespective of their level of skills—and develop their physical and motor abilities. As Ames (1992a) claimed, when students are presented with the chance to adopt leadership roles during class, it helps them to develop the skills needed for learning on their own, and when this is done on a regular basis, this is linked to more student-centered styles of teaching, such as the reciprocal and inclusion styles. This in turn may help students to develop self-management skills and to keep learning throughout their lives.

With regard to the second hypothesis of the study, the results confirmed our initial assumption: task-oriented climate significantly influenced students' intentions to participate in leisure-time PA. This finding suggests that a task-oriented motivational climate is another factor for the PE teacher to consider when trying to convince their students to engage in lifelong PA. This is not surprising, since several studies have confirmed that (a) the motivational climate—that prevails in the classroom—reflects directly on students' motivation for participation and effort in class and on their attitudes and intentions to engage in PA during their spare time (Chung & Phillips, 2002; Gutiérrez & Ruiz, 2009; Hagger et al., 2003; Morgan & Carpenter, 2002; Sproule et al., 2007); (b) the methods and teaching styles that support interactions among students (e.g., the reciprocal style)

positively affect a classroom's task-oriented motivational climate, result in task-oriented teaching behaviors, and are positively correlated with the students' intention to continue participating in sports after graduation (Goudas et al., 1995; Morgan et al., 2005; Ntoumanis, 2001); and (c) the inclusion style is associated with higher scores of intrinsic motivation, with task orientation, and with the perception of a mastery goal structure in lessons (Goudas et al., 1995; Salvara et al., 2006). Apparently, the lack of competition, the focus on individual progress, and the removal of comparison circumstances among students serve as parts of a framework for adopting positive attitudes about the course and for the student to experience success, which strengthens their self-confidence. All these may reflect later intentions of students to resume this activity beyond school.

Limitations and Suggestions for Further Studies

Despite that the study provides useful information about students' intentions and future behaviors, it is not free of limitations. First, this study relies on students' self-assessments about the PE motivational climate and their intentions to exhibit a specific behavior (e.g., participating in leisure-time PA) in the future. Although the questionnaires have been proven valid and reliable, still they reflect students' intentions for the future that may have been influenced by social desirability or misinterpretation of the items about such behaviors. Future studies could use observation protocols to record the motivational climate during PE or could include physical educators' perspectives. In addition, future studies should address further issues that might contribute to the understanding of students' actual behavior concerning PA outside the educational framework (e.g., during leisure time) by asking, for instance, their parents to answer respective questions. Second, the sample of this study consists only of students of a specific age (11–12 years old) and the sample size in the intervention subgroup using the reciprocal style ($n = 22$ students) is small. Therefore, the results cannot be generalized to students of other ages and/or in different school classes (e.g., students in secondary education, preschoolers) and should be interpreted carefully concerning the effect of reciprocal teaching style on intention to partake in PA during leisure time. Future research should expand the findings of this study into more age groups. Finally, in the future, it would be useful to adopt more teaching styles of the spectrum and to

investigate their effects on all four antecedents of a person's (future) behavior according to TPB.

Conclusion

Through this study, we attempt to establish a way of teaching PE that aims to convince students to actively engage in the class, to pursue PA outside the educational framework, and to adopt it as way of life, to promote their health and subsequently to become healthy adults in the future. It seems that the appropriate structure and the careful planning of the PE lessons could enhance students' intention for PA (and, additionally, could promote their participation in similar actions out of the school) without deviating from the current curriculum.

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